WHAT IS CLAIMED IS:

1. A semiconductor light emitting device comprising a single-crystal silicon substrate, an insulating layer formed on the single-crystal silicon substrate, and gallium nitride type compound semiconductor layers stacked on the insulating layer.

2. The semiconductor light emitting device of Claim 1, wherein the single-crystal silicon substrate has a (111) crystal plane as a principal plane.

3. The semiconductor light emitting device of Claim 1, wherein the insulating layer is made of at least one of silicon nitride and aluminum oxide.

4. The semiconductor light emitting device of Claim 1, wherein the gallium nitride type compound semiconductor layers are a plurality of layers including a p-type layer and an n-type layer and having an active layer for emission of light.

5. The semiconductor light emitting device of Claim 4, wherein the gallium nitride compound semiconductor layers comprises a buffer layer, a lower cladding layer, an active layer, an upper cladding layer, and a cap layer.

6. The semiconductor light emitting device of Claim 5, wherein the buffer layer is made of n-type GaN, the lower cladding layer is made of n-type $Al_xGa_{1-x}N$ ($0<x<1$), the active layer is made of $Ga_nIn_{1-n}N$ ($0<n\leq 1$), the upper cladding layer is made of p-type $Al_xGa_{1-x}N$ ($0<x<1$), and the cap layer is made of p-type GaN.

7. A method for producing a semiconductor light emitting device comprising the steps of:

(a) forming an insulating layer on a single-crystal silicon substrate;

(b) forming a gallium nitride type compound semiconductor layer as a buffer layer on the insulating layer;

(c) stacking on the buffer layer in sequence a lower cladding layer, an active layer, an upper cladding layer, and a cap layer, these layers being made of the gallium nitride type compound semiconductor;

(d) exposing a predetermined surface of the buffer layer by etching perpendicularly to the single-crystal silicon substrate;

(e) forming electrodes on both the cap layer and the predetermined surface of the buffer layer exposed by the etching treatment in step (d), whereby obtaining a semiconductor wafer having multilayer structure; and

(f) separating the semiconductor wafer to chips by dicing or by cleaving.

8. The method for producing the semiconductor light emitting device of Claim 7, wherein the single-crystal silicon substrate has a (111) crystal plane as a principal plane.

9. The method for producing the semiconductor light emitting device of Claim 7, wherein the step of forming the insulating layer is implemented by removing an oxide film over the single-crystal silicon substrate and forming a silicon nitride layer by heating under an atmosphere of nitrogen gas.

10. The method for producing the semiconductor light emitting device of Claim 7, wherein the step of forming the insulating layer is implemented by growing a layer of aluminum oxide.

11. A semiconductor light emitting device comprising gallium nitride type compound semiconductor layers stacked on a gallium nitride type compound semiconductor substrate.

12. A method for producing a semiconductor light emitting device comprising the steps of:

(g) growing a gallium nitride type compound semiconductor layer on a single-crystal semiconductor substrate;

(h) removing the single-crystal semiconductor substrate; and

(i) growing single-crystal gallium nitride type compound semiconductor layers including at least both an n-type layer and a p-type layer, on the single-crystal gallium nitride type compound semiconductor layer, with utilizing the gallium nitride type compound semiconductor layer as a new substrate.

13. The method for producing the semiconductor light emitting device of Claim 12, wherein the single-crystal semiconductor substrate is made of at least one member of selected from the group consisting of gallium arsenide, gallium phosphide, indium phosphide, and silicon, and has a (111) crystal plane.

14. The method for producing the semiconductor light emitting device of Claim 12, wherein the step (g) of growing the gallium nitride type compound semiconductor layer on the single-crystal semiconductor substrate is implemented by forming a low-temperature buffer layer of the gallium nitride type compound semiconductor on the single-crystal semiconductor substrate at low temperature of 400℃ to 700℃ and growing the gallium nitride type compound semiconductor layer at higher temperature of 700℃ to 1200℃.

15. The method for producing the semiconductor light emitting device of Claim 12, wherein before the step (i) of growing the single-crystal gallium nitride type compound semiconductor layers, a low-temperature buffer layer of a gallium nitride type compound semiconductor is grown at low temperature of 400℃ to 700℃ and then, a high-temperature buffer layer of the gallium nitride type compound semiconductor is grown at high temperature of 700℃ to 1200℃ and is followed by the growing of the single-crystal gallium nitride type compound semiconductor layers.

16. The method for producing the semiconductor light emitting device of Claim 15, wherein the single-crystal gallium nitride type compound semiconductor layers including at least both an n-type layer and a p-type layer comprise an n-type cladding layer, an active layer, and a p-type cladding layer, these layers forming a sandwich structure, the band gap energy of the active layer being smaller than that of the n-type cladding layer or p-type cladding layer, and the n-type cladding layer, p-type cladding layer and high-temperature buffer layer and the gallium nitride type compound semiconductor substrate being the same in chemical composition.

17. The method for producing the semiconductor light emitting device of Claim 12, wherein a semiconductor

wafer on which the single-crystal gallium nitride type compound semiconductor layers are formed is cleft to chips.

18. A semiconductor light emitting device comprising gallium nitride type compound semiconductor layers stacked on a group II-VI compound semiconductor substrate.

19. The semiconductor light emitting device of Claim 18, wherein the gallium nitride type compound semiconductor layers are stacked on the substrate having a principal plane, the principal plane being a top surface comprising group VI atoms of the group II-VI compound semiconductor substrate.

20. The semiconductor light emitting device of Claim 18, wherein the semiconductor substrate of the group II-VI compound material is made of at least one of zinc selenide and zinc sulfide.

21. The semiconductor light emitting device of Claim 18, wherein the gallium nitride type compound semiconductor layers are a plurality of layers including a p-type layer and an n-type layer and having an active layer for emission of light.

22. The semiconductor light emitting device of Claim 18, wherein the gallium nitride type compound semiconductor layers comprises a buffer layer, a lower cladding layer, an active layer, an upper cladding layer, and a cap layer.

23. The semiconductor light emitting device of Claim 22, wherein the buffer layer is made of n-type GaN, the lower cladding layer is made of n-type $Al_xGa_{1-x}N$ ($0<x<1$), the active layer is made of $Ga_nIn_{1-n}N$ ($0<n\leq 1$), the upper cladding layer is made of p-type $Al_xGa_{1-x}N$ ($0<x<1$), and the cap layer is made of p-type GaN.

24. A method for producing a semiconductor light emitting device comprising the steps of:

(j) preparing a group II-VI compound semiconductor substrate;

(k) stacking a buffer layer of gallium nitride type compound semiconductor on a principal plane of the group II-VI compound semiconductor substrate;

(l) stacking on the buffer layer in sequence a lower cladding layer, an active layer, an upper cladding layer, and a cap layer, these layers being made of gallium nitride semiconductor, with matching crystal lattice of each layer to one another;

(m) forming electrodes on both the top of the cap layer and the bottom of the group II-VI compound

semiconductor substrate, whereby obtaining a semiconductor wafer having multilayer structure; and

(n) cleaving the semiconductor wafer to chips.

25. The method for producing a semiconductor light emitting device of Claim 24, wherein the step of stacking the buffer layer is implemented by forming a low-temperature buffer layer at low temperature and then, by forming a high-temperature buffer layer at high temperature.

26. The method for producing a semiconductor light emitting device of Claim 24, wherein the buffer layers are made of n-type GaN, the lower cladding layer is made of n-type $Al_xGa_{1-x}N$ $(0<x<1)$, the active layer is made of $Ga_nIn_{1-n}N$ $(0<n\leq 1)$, the upper cladding layer is made of p-type $Al_xGa_{1-x}N$ $(0<x<1)$, and the cap layer is made of p-type GaN.

27. The method for producing a semiconductor light emitting device of Claim 24, wherein the group II-VI compound semiconductor substrate having a principal plane, the principal plane being a top surface comprising group VI atoms of the group III-V compound semiconductor substrate, is prepared.

28. A semiconductor light emitting device

comprising gallium nitride type compound semiconductor layers stacked on a group III-V compound semiconductor substrate.

29. The semiconductor light emitting device of Claim 28, wherein the gallium nitride type compound semiconductor layers are stacked on the group III-V compound semiconductor substrate having a principal plane, the principal plane being a top surface comprising group V atoms of the group III-V compound semiconductor substrate, is prepared.

30. The semiconductor light emitting device of Claim 28, wherein the group III-V compound semiconductor substrate is made of a member selected from the group consisting of gallium arsenide, indium arsenide, gallium phosphide and indium phosphide.

31. The semiconductor light emitting device of Claim 28, wherein the gallium nitride type compound semiconductor layers are a plurality of layers including a p-type layer and an n-type layer and having an active layer for emission of light.

32. The semiconductor light emitting device of Claim 28, wherein the gallium nitride type compound semiconductor layers comprises a buffer layer, a lower

cladding layer, an active layer, an upper cladding layer, and a cap layer.

33. The semiconductor light emitting device of Claim 32, wherein the buffer layer is made of n-type $Ga_wIn_{1-w}N$ ($0<w\leq1$), the lower cladding layer is made of n-type $Al_xGa_{1-x}N$ ($0\leq x<1$), the active layer is made of $Ga_nIn_{1-n}N$ ($0<n\leq1$), the upper cladding layer is made of p-type $Al_xGa_{1-x}N$ ($0<x<1$), and the cap layer is made of p-type GaN.

34. A method for producing a semiconductor light emitting device comprising the steps of:

(o) preparing a group III-V compound semiconductor substrate;

(p) stacking a buffer layer of gallium nitride type compound semiconductor on a principal plane of the group III-V compound semiconductor substrate;

(q) stacking on the buffer layers in sequence a lower cladding layer, an active layer, an upper cladding layer, and a cap layer, these layers being made of gallium nitride type semiconductor, with matching crystal lattice of each layer to one another;

(r) forming electrodes on both the top of the cap layer and the bottom of the group III-V compound semiconductor substrate, whereby obtaining a semiconductor wafer having multilayer structure; and

(s) cleaving the semiconductor wafer to chips.

35. The method for producing semiconductor light emitting device of Claim 34, wherein the step of forming the buffer layers is implemented by forming a low-temperature buffer layer at low temperature and then, by forming a high-temperature buffer layer at high temperature.

36. The method for producing the semiconductor light emitting device of Claim 34, wherein the buffer layers are made of n-type $Ga_wIn_{1-w}N$ ($0<w\leq 1$), the lower cladding layer is made of n-type $Al_xGa_{1-x}N$ ($0\leq x<1$), the active layer is made of $Ga_nIn_{1-n}N$ ($0<n\leq 1$), the upper cladding layer is made of p-type $Al_xGa_{1-x}N$ ($0\leq x<1$), and the cap layer is made of p-type GaN.

37. The method for producing the semiconductor light emitting device of Claim 34, wherein the group III-V compound semiconductor substrate having a principal plane, the principal plane being a top surface comprising group V atoms of the group III-V compound semiconductor substrate, is prepared.